

IN THE CLAIMS:

1. (Original) A method for preparing a coated superalloy article, comprising the steps of

furnishing a nickel-base superalloy article substrate having a rhenium content of not less than about 4.0 percent by weight; thereafter

depositing an aluminum-containing coating onto a surface of the article substrate, the aluminum-containing coating including

an additive zone having an average aluminum content of not greater than about 27 percent by weight, and

a diffusion zone of interdiffusion with the article substrate,

wherein a ratio of a thickness of the additive zone to a thickness of the diffusion zone is not greater than about 3:1.

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2. (Original) The method of claim 1, wherein the step of furnishing includes the steps of

furnishing the nickel-base superalloy article made of the alloy Rene' N6, which has a nominal composition in weight percent of about 12.5 percent cobalt, about 4.2 percent chromium, about 1.4 percent molybdenum, about 5.75 percent tungsten, about 5.4 percent rhenium, about 7.2 percent tantalum, about 5.75 percent aluminum, about 0.15 percent hafnium, about 0.05 percent carbon, about 0.004 percent boron, about 0.01 percent yttrium, balance nickel and incidental impurities.

3. (Original) The method of claim 1, wherein the step of furnishing includes the step of

stress relieving the article substrate, and the step of depositing is performed without any intermediate cold working of the surface of the article substrate.

4. (Original) The method of claim 1, wherein the step of furnishing includes the step of

furnishing the nickel-base superalloy article substrate in the form of a component of

a gas turbine engine.

5. (Original) The method of claim 1, wherein the step of furnishing includes the step of
furnishing the nickel-base superalloy article substrate in the form of a gas turbine blade.

6. (Original) The method of claim 1, wherein the ratio of the thickness of the additive zone to the thickness of the diffusion zone is from about 0.75:1 to about 1.25:1.

7. (Original) The method of claim 1, wherein the step of depositing includes the step of
depositing the aluminum-containing coating by a technique selected from the group consisting of vapor-phase aluminiding and chemical vapor deposition.

8. (Original) The method of claim 1, wherein the step of depositing includes the step of
heating the article substrate to a temperature of from about 1925°F to about 2000°F.

9. (Original) The method of claim 1, wherein the average aluminum content of the additive zone is from about 22 to about 27 percent by weight.

10. (Currently amended) A method for preparing a coated superalloy article, comprising the steps of

furnishing a nickel-base superalloy article substrate having a rhenium content of not less than about 4.0 percent by weight; thereafter

depositing an aluminum-containing coating onto a surface of the article substrate at a temperature of from about 1925°F to about 2000°F, the aluminum-containing coating including

an additive zone having an average aluminum content of not greater than about 27 percent by weight, and

a diffusion zone of interdiffusion with the article substrate, wherein the aluminum-containing coating has substantially no platinum-group element therein.

11. (Original) The method of claim 10, wherein the step of furnishing includes the steps of

furnishing the nickel-base superalloy article made of the alloy Rene' N6, which has a nominal composition in weight percent of about 12.5 percent cobalt, about 4.2 percent chromium, about 1.4 percent molybdenum, about 5.75 percent tungsten, about 5.4 percent rhenium, about 7.2 percent tantalum, about 5.75 percent aluminum, about 0.15 percent hafnium, about 0.05 percent carbon, about 0.004 percent boron, about 0.01 percent yttrium, balance nickel and incidental impurities.

12. (Original) The method of claim 10, wherein the step of furnishing includes the step of

stress relieving the article substrate, and the step of depositing is performed without any intermediate cold working of the surface of the article substrate.

13. (Original) The method of claim 10, wherein the step of furnishing includes the step of

furnishing the nickel-base superalloy article substrate in the form of a component of a gas turbine engine.

14. (Original) The method of claim 10, wherein the step of furnishing includes the step of

furnishing the nickel-base superalloy article substrate in the form of a gas turbine blade.

15. (Original) The method of claim 10, wherein the step of depositing includes the step of

depositing the aluminum-containing coating by a technique selected from the group consisting of vapor-phase aluminizing and chemical vapor deposition.

16. (Original) The method of claim 10, wherein the average aluminum content of the additive zone is from about 22 to about 27 percent by weight.

17. (Original) A coated superalloy article comprising
a nickel-base superalloy article substrate having a rhenium content of not less than about 4.0 percent by weight; and

an aluminum-containing coating at a surface of the article substrate, the aluminum-containing coating including

an additive zone having an average aluminum content of not greater than about 27 percent by weight, and

AI a diffusion zone of interdiffusion with the article substrate,
wherein a ratio of a thickness of the additive zone to a thickness of the diffusion zone is not greater than about 3:1.

18. (Original) The article of claim 17, wherein the nickel-base superalloy article is made of the alloy Rene' N6, which has a nominal composition in weight percent of about 12.5 percent cobalt, about 4.2 percent chromium, about 1.4 percent molybdenum, about 5.75 percent tungsten, about 5.4 percent rhenium, about 7.2 percent tantalum, about 5.75 percent aluminum, about 0.15 percent hafnium, about 0.05 percent carbon, about 0.004 percent boron, about 0.01 percent yttrium, balance nickel and incidental impurities.

19. (Original) The article of claim 17, wherein the article substrate is a component of a gas turbine engine.

20. (Original) The article of claim 17, wherein the article substrate is a gas turbine blade.

21. (New) The method of claim 1, wherein the step of depositing the aluminum-containing coating includes the step of
depositing the aluminum-containing coating having substantially no platinum-group

element therein.

22. (New) The method of claim 1, wherein the step of depositing the aluminum-containing coating includes the step of

depositing the aluminum-containing coating such that the diffusion zone extends inwardly into the substrate from an original surface of the substrate.

23. (New) The method of claim 10, wherein the step of depositing the aluminum-containing coating includes the step of

depositing the aluminum-containing coating wherein a ratio of a thickness of the additive zone to a thickness of the diffusion zone is not greater than about 3:1.

24. (New) The method of claim 10, wherein the step of depositing the aluminum-containing coating includes the step of

depositing the aluminum-containing coating such that the diffusion zone extends inwardly into the substrate from an original surface of the substrate.

25. (New) The article of claim 17, wherein the aluminum-containing coating has substantially no platinum-group element therein.

26. (New) The article of claim 17, wherein the diffusion zone extends inwardly into the substrate from an original surface of the substrate.